

THE IMPORTANCE OF LOCALLY SOURCED INSTRUCTIONAL MATERIALS FOR SECONDARY SCHOOL CHEMISTRY EDUCATION

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Abstract

This research set out to determine whether or not secondary school students would benefit from using locally sourced instructional materials for their chemistry labs. A total of two hundred and eighteen secondary school students participated in the study. The survey was set up as a cross-sectional analysis. The participants responded to a self-report measure on their experience of locally sourced instructional material and the perceived learning outcome. A simple linear regression was conducted on the data, and the result showed that locally sourced instructional material statistically predicted effective chemistry learning. Finding and conclusions are discussed.

Keywords: Chemistry, locally sourced material, secondary school, students

Introduction

In the educational setting, chemistry is a required science subject considered very important. The natural science of chemistry holds a central place in the curriculum of secondary schools because of its importance to students' future careers (Igwe, 2015). Chemistry is a foundational science that students must complete to enter nearly all fundamental and applied science programs at the postsecondary level of education. This requirement is met at the senior school certificate level (Zephirus et al., 2015). Education in chemistry is regarded as essential for developing human capability, expanding the skilled labor force necessary for modernization or personal freedom, and cultivating capability and empowerment (Ayodele, 2018). Learning chemistry is a prerequisite for a wide variety of careers, including those in the medical, petrochemical, and food processing industries (Bamidele et al., 2013). Perhaps the most essential factor in the expansion and development of the economy is chemistry. The chemistry study helps students acquire scientific knowledge and encourages them to develop science-oriented attitudes (Igwe, 2015).

On the other hand, there is a growing concern about the perceived decline in interest in chemistry among students attending secondary schools in Nigeria. One possible explanation for this phenomenon is that the content of the lessons and the practices are too complex. According to Zephirus and colleagues (2015), the high level of abstraction of chemistry concepts combined with a lack of or insufficient laboratory resources for demonstration and experimentation may be to blame for the declining interest in chemistry among young students. During a conversation with secondary school students, it was discovered that they consider chemistry and other closely related subjects, such as mathematics and physics, to be the most challenging subject in the curriculum. This perception could be explained by the ambiguity and complexity of the instructional materials and the teaching approach taken by the instructor. Igwe (2015) and Achimugu (2009) pointed to a lack of classrooms and laboratory facilities as obstacles to learning chemistry. They also blamed

an inadequate supply of qualified chemistry teachers, a lack of motivation among chemistry teachers, and an inadequate supply of instructional materials for this problem.

The current study assumes that locally sourced instructional material remains a veritable tool in teaching and learning chemistry at Nigeria's secondary education level. Instructors must employ creative teaching methods to ensure that chemistry concepts are comprehensible to students (Nbina, 2012). Olayinka (2016) noted that instructional materials are essential and significant tools for teaching school subjects to promote teachers' efficiency and improve student performance. Chemistry teaching aids can help relate chemistry with the phenomena of everyday life (Priyambodo & Wulaningrum, 2017). Accordingly, Fadeiye (2005) referred to instructional materials as visual and audio-visual aids, concrete or non-concrete, applied by teachers to improve teaching and learning quality. Thus, the current study aimed to assess students' perception of the role of locally sourced instructional learning tools on the learning outcome of chemistry at the secondary school level.

Method

The current study adopted a cross-sectional survey design. The population included secondary school students in Ebonyi educational zone State, Nigeria. Two hundred and eighteen (218) students were randomly drawn from the selected schools with the study parameter.

Measures

A self-report measure designed to elicit students' experience of locally sourced instructional material and their perceived learning outcome was developed for the study. The Likert-type scale scored in a five-point scale comprising two parts with fifteen items. The reliability of the scale was determined at a .87 Cronbach alpha coefficient.

Result

Table 1: shows the result of a simple regression analysis on the role of locally sourced instructional material in chemistry learning.

Model	B	SEB	β	R^2	t	Sig
(Constant)	.822	0.98				
Locally Sourced Material	.653	.098	.653	.416	6.667	.000

A simple linear regression was conducted to determine the effective learning of chemistry based on locally sourced instructional materials. The result showed that locally sourced instructional materials positively predicted an adequate understanding of chemistry at $F(1, 216) = 23.169$, $P < .000$, with an R^2 of .416. The result showed that locally sourced instructional materials significantly predicted effective chemistry learning.

Discussion

This study aimed to investigate the role that instructional material sourced locally plays in secondary school students' efficient learning of chemistry. According to the findings, locally sourced instructional materials were responsible for 41.6% of the statistical variance in a sufficient

understanding of chemistry. This study's findings are consistent with those reported in earlier studies (e.g., Oladejo et al., 2011; Esu et al., 2004; Ifeoma, 2013; Olayinka, 2016; Atanda and Jaiyeoba, 2011). Accordingly, improvisation of the instructional material was found to be more effective for teaching and learning, particularly in scientific subject areas, by the studies that were discussed previously. The fact that locally sourced instructional material is designed to conform to the learners' norms, in contrast to the traditional learning material designed based on Western principles, is likely one of the reasons why it is so effective. Put another way, locally sourced instructional materials are tailor-made to an individual, considering the individual's preferred learning method.

Strengths, Weakness, and Suggestions for Further Studies

The study further provided evidence supporting applying locally sourced instructional material in teaching and learning chemistry and related subjects at the secondary school level. It further revealed that students hold a positive perception of the practice. It is essential to state the limitations of this study. First, the study adopted a cross-sectional survey design and did not conduct experimentation on the possible cause-effect relationship. Secondly, the sampling method may not be suitable for the generalization of the result of the study. Nevertheless, it is suggested that future researchers adopt a more robust sampling approach and conduct experimentation on a broader scope.

Conclusion

The current study examined the predictive role of locally sourced material in chemistry learning. The simple linear regression result revealed a statistically significant association between locally sourced instructional material and the effective understanding of chemistry. Hence, it is concluded that locally sourced instructional materials are an indispensable tool in chemistry learning. Therefore, it is recommended that the trend be effectively adopted in the curriculum and across the secondary school level.

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